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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
|-----------------|-------------|----------------------|---------------------|------------------|
| 10/697,282      | 10/31/2003  | Se Wan Kim           | P24527              | 8430             |

7055 7590 04/07/2006

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EXAMINER

MARC, MCDIEUNEL

|          |              |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
|----------|--------------|

3661

DATE MAILED: 04/07/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/697,282

Applicant(s)

KIM ET AL.

Examiner

McDieunel Marc

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 12 January 2006.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 1-18 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-8, 13-16 and 18 is/are rejected.
- 7) ☒ Claim(s) 4, 9, 10, 12 and 17 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 31 October 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
- 1) ☒ Certified copies of the priority documents have been received.
  - 2) ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - 3) ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. Claims 1-12 are presented for examination.
2. The rejection to claims 1-3, 5-8 and 11 are rejected under 35 U.S.C. 102(b) as being anticipated by Weber (U.S. Pat. No. 5,491,670 A) is maintained.

#### *Claim Rejections - 35 USC § 102*

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claims 2-3, 5, 7-8, 11 and 13-16 are rejected under 35 U.S.C. 102(b) as being anticipated by Weber (U.S. Pat. No. 5,491,670 A).

As per claims 1, 6 and 13, Weber teaches a system and an associated method having a mobile robot using an image sensor (see Weber' s video cameras in col. 1, line 58, which being considered as image sensor), comprising: an image capturer that captures, at predetermined intervals images of a bottom surface in accordance with motion of a mobile robot by using and image sensor (see particularly video cameras as mentioned above); a displacement measurer that measures displacement with respect to the captured image (see video cameras of the abstract in combination with col. 22, lines 53-56); and a microcomputer that outputs an actual moving distance by direction

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and motion of the mobile robot on the basis of a value of the measured displacement (besides Weber' s computer, inherently a microcomputer system being used in order to calculate actual distance).

As per claims 2-3, 5, 7-8, 11 and 14-16, Weber further comprising: a memory for storing images outputted from the image capture unit (see Weber' s video cameras as described above); and a comparator for comparing an image presently outputted from the image capture unit with a previous image stored in the memory (see col. 1, line 56 – to – col. 2, lines -16 , particularly recognize landmarks involves comparison). With respect to claim 7, storing the captured image (see Weber' s computer system). With respect to claim 3, wherein the displacement measurer measures a moving path of pixels of an image of each frame outputted from the comparator (see col. 1, line 56 – to – col. 2, lines -16 , particularly recognize landmarks involves comparing pixels of images). With respect to claim 5, a luminous diode for irradiating light; a light guide for guiding the irradiated light; and an image sensor for capturing an image about the bottom surface by sensing intensity variation of light reflected onto the bottom surface through a light lens according to motion of the mobile robot (see inherently such limitation has been covered into the video camera as noted above). With respect to claim 8, wherein the image is divided into a certain pixels in the image capturing step, each pixel receives light reflected onto the bottom surface according to a material of the bottom surface and is discriminated by black and white brightness (inherently such limitation has been known in the video camera art). With respect to claim 11, wherein a moving distance is measured according to direction of the pixel and magnitude of movement in the image in the displacement measuring step (besides Weber' s computer, inherently a microcomputer system being used in order to calculate actual distance as noted above).

*Allowable Subject Matter*

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5. Claims 4, 9-10, 12 and 17 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

6. The following is a statement of reasons for the indication of allowable subject matter:

The prior art of record fail to teach or fairly suggest with respect to claim 4, wherein the image capture unit captures an image of the bottom surface having 18\*18 pixel and 64-degrees brightness by 1500 frames per second. With claim 8, wherein the image is captured by 1500 frames per second so as to have 18\*18 pixels and 64-degrees brightness. With respect to claim 10, wherein the actual moving distance is calculated by dividing a pixel moving distance by a certain time, more preferable,  $\{ \frac{1}{1500} \}$  sec. With respect to claims 12 and 17, wherein it is judged the mobile robot is not moved, when each captured image is the same in comparison, it is judged the mobile robot is moved, when each captured image is not the same in comparison in the displacement measuring step.

### ***Response to Arguments***

As to the reference not teaching video camera in the abstract, Examiner and the applicant's representative conclude that Weber's reference contains video cameras which being used as sensor and device for capturing image.

As to the reference not teaching a mobile robot, Weber is teaching a robot in combination with navigation technology, and furthermore, Weber disclosure belongs to mobile robot

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environment, wherein technical field of search of issued patent contains in its record the following art documents:

A. Zelinsky, "Mobile Robot Map Making Using Sonar", 1991, Journal of Robotic Systems 8(5), pp. 557-577.

Hisashi Suzuki, Suguru Arimoto, "Visual Control of Autonomous Mobile Robot Based on Self-Organizing Model for Pattern Learning", Oct. 1988, Journal of Robotic Systems, 5(5), pp. 453-470.

Tod S. Levitt, Daryl T. Lawton, "Qualitative Navigation for Mobile Robots", 1990, Artificial Intelligence 44 (1990) pp. 305-360, v44, No. 3, Holland.

7. Applicant's arguments filed 1/12/2006 have been fully considered but they are not persuasive.

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

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however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

9. Any inquiry concerning this communication or earlier communications from the examiner should be directed to McDieunel Marc whose telephone number is (571) 272-6964.

The examiner can normally be reached on 6:30-5:00 Mon-Thu.


If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas Black can be reached on (571) 272-6956. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

  
McDieunel Marc

Monday, March 27, 2006

MM/

  
THOMAS G. BLACK  
SUPERVISORY PATENT EXAMINER  
GROUP 3600